

---

XVII. *On the Deoxidation of the Leaves of Cotyledon calycina; in a Letter to A. B. Lambert, Esq., Vice-President of the Linnean Society. By Benjamin Heyne, M.D. F.L.S.*

*Read April 20, 1813.*

DEAR SIR,

I HAD an opportunity some time ago of mentioning to you a remarkable deoxidation of the leaves of a plant in day-light. As the circumstance is in itself curious, and throws great light on the opinion of those celebrated philosophers who have written on the subject, I will state it shortly in this letter, which if you please, you may in extract, or in any other way you think proper, lay before the Society.

The leaves of the *Cotyledon calycina*, the plant called by Mr. Salisbury *Bryophyllum calycinum*, which on the whole have an herbaceous taste, are in the morning as acid as sorrel, if not more so; as the day advances, they lose their acidity, and are tasteless about noon; and become almost bitterish towards evening. This is the case in India, where this plant is pretty generally cultivated in our gardens; and it remains to be seen if the same takes place in the hot-houses in England, where it has been lately introduced.

I have seen this plant but once in this country, and that was at Mr. Loddiges', at Hackney, about twelve o'clock in the day-time, when I found it quite tasteless. The distance of that place from



my habitation has hitherto prevented me from attending to it at an earlier hour in the morning. I have, however, but little doubt it will be found as acid as I have described it to be in India.

I need scarcely observe, that the acidity which these leaves possess in the morning cannot be ascribed to any thing else than to the oxygen which the plant has absorbed during the darkness of the night, or which has been transferred from other constituent principles of the plant during that period. I think it has been absorbed, as it is so loosely united to its base, that even the light of the day has an immediate effect of disengaging it again.

Both Priestley and Ingenhousz have concluded, from numerous experiments, that all plants exhale vital air in the day-time, and fixt air or carbonic acid gas during the night; but these conclusions have been called in question by some, from the various results of experiments since made on this subject. What I have now related is therefore not destitute of interest, as it seems incontrovertibly to establish the theory of these celebrated philosophers.

I was in hopes of learning something new or pertinent on this interesting subject in Sprengel's work on the Structure and Nature of Plants: but, to my great disappointment, there is nothing to be found but what has been advanced by the two philosophers just mentioned, and by Saussure and Sennebier in later times.

Sprengel expatiates much on the exhalation and absorption of carbonic gas, and only once mentions oxygen, when he notices Sennebier's observations; according to which, more carbonic gas is exhaled by plants during the night in close vessels, than there is oxygen disengaged in sunshine.

I beg leave further to observe, that the plant above treated of is, in my opinion, truly a species of *Cotyledon*, with which it perfectly  
agrees



agrees in habit and generic characters; the only difference being in the number of the parts of fructification, which in *Cotyledon calycina* are one-fifth less than in the other species of the genus; a difference, however, that according to the principles of the Linnean System, does not form a sufficient ground for separation.

I have the honour to be, &c.

20th April, 1813.

BENJAMIN HEYNE.